

be due to these causes. Hæmorrhages occur and recur under certain conditions; the most common of which are changes in the weather, the menstrual cycle, and the presence of some acute infection. They are usually small in amount; they frequently persist over several days, and are apt to recur under similar conditions. The tendency for tuberculous patients to spit blood during the menstrual period has long been recognised. This tendency has been referred to a vicarious menstruation. This explanation is now known to be incorrect. Recent advances in biophysics and studies on the physiology of the circulatory system suggest another explanation for some types of bleeding. Krogh has discussed the effect of capillary poisons causing such a permeability of the vessel walls as to permit the passage through it of the constituents of the blood into the tissues. Among substances classed as capillary poisons he mentions histamin, sepsin, and certain salts of gold and arsenic. Some types of acute respiratory infection, which have been common since the influenza epidemic of 1918, have not only been the cause of blood spitting in some tuberculous patients but also in others in whom Dr. Pottinger could find no evidence of tuberculous disease. Certain toxins from the tubercle bacilli and from other micro-organisms causing acute infections may act as direct capillary poisons. An increased permeability of the vessel walls

may also arise as a result of an increased activity in the local cells.

It is perhaps more difficult to explain the manner in which hæmoptysis accompanying changes in the weather is produced. The effects of temperature changes upon the superficial capillaries in the body and the influence of the varying content in light rays and in electric units under conditions of storm and pleasant weather, and the sometimes rapid alterations in the barometric pressure must be regarded as potent factors in disturbing physiological action and call for much adjustment. Hæmorrhages which depend on weather changes are most apt to occur at the time of day when atmospheric pressure is low. Pottinger sums up his argument as follows: Acute infections of the lung are apt to produce their greatest effect at the point where the tissues are now, or have been injured, by tuberculous disease. This causes increased activity and permeability of tissue including blood vessels, resulting in conditions which permit the passage of blood through the vessel wall. The menstrual enzyme in some manner causes increased activity in local tuberculous processes, which is occasionally accompanied by increased permeability and hæmorrhage. Certain weather changes also, while affecting all the tissues of the body, affect particularly those which have been injured as the result of active disease and may cause the blood to pass through the capillaries.

---

## COMPARISON OF THE TWO HYOSCINES

FROM the pharmacological laboratory of the University of Edinburgh we note an interesting paper by Chassar Moir on the physiological actions of the hyoscines (*British Medical Journal*, September 19, 1925). Hyoscine exists in two forms, identical in their reaction to ordinary chemical reagents, but differing in the direction in which they rotate the plane of polarized light, and are therefore known as optical isomers. The lævo-rotatory alkaloid is the one that occurs in nature and the one that should be used

in therapeutics. The dextro-rotatory may be formed artificially. A mixture in equal parts of the two isomers is known as racemic hyoscine, and is occasionally met with.

While these forms cannot be differentiated by ordinary reagents, they can be distinguished by substances which also rotate the plane of polarized light and are optically active. There are a number of other drugs in which similar isomeric conditions exist and which manifest a marked difference in their effects on

living tissues. For example, the natural lævo-rotatory hyoscyamine and adrenalin are some fifteen to twenty times as powerful as the dextro-rotatory hyoscyamine and adrenalin. It appeared, therefore, to be of importance to determine whether a similar difference in their physiological action existed in the two hyoscines. As regards their action on the peripheral nerves, the racemic form containing equal amounts of dextro- and lævo-rotatory hyoscine was found to be only half as powerful as the lævo-rotatory, while the lævo-rotatory proved to be from sixteen to eighteen times the strength of the dextro-rotatory one. In experiments on animals to determine the narcotic action no satisfactory results were obtained as animals apparently do not react to small doses. On a request from Professor Cushny an effort was made to ascertain the effect of these two hyoscines on the higher mental processes; first, as regards their efficacy in producing twilight sleep, and secondly in controlling restlessness in cases of insanity.

In the Edinburgh Royal Maternity Hospital, observations were carried out carefully on twenty-seven cases. As far as possible the two varieties were given in alternate cases. The majority of the cases were primipara. For each case a special chart was kept in which hourly progress was recorded. The dextro-hyoscine cases numbered twelve. In no case was any impairment of the intelligence

observed, and in none did there appear to be any alteration in the sensation of pain; sleep was not induced. Increase of the standard dosage made no change in the results obtained. The lævo-hyoscine cases numbered fifteen. In ten there was complete amnesia, the patients remembering nothing after the first or second injection. They were completely oblivious to the passage of time, and although they had been a day or more in the hospital many would declare they had only just arrived. Intelligence was markedly disordered and often most absurd answers were given to questions. After the second injection the patient lapsed into the curious dazed state of twilight sleep. The depressant action on the newborn's respiratory centre was also investigated, and it was noted that among the lævo-hyoscine cases it was not unusual for several minutes to elapse before respiration was satisfactorily established. After the administration of dextro-hyoscine patients only became rather restless and this may have been due to natural fatigue. From these clinical observations it would appear that only lævo-hyoscine is active in producing amnesia, in depressing the intelligence, and in controlling restlessness. The dextro-rotatory form in doses of 1/100-th grain or more is apparently inert in these directions, and can only be regarded as a useless ingredient when present in any prescription.

---

## EVIL OF SMOKE POLLUTION IN LARGE CITIES

THE attention that has been given to heliotherapy and other forms of light treatment has served to produce a greater realization of the evils of smoke pollution of the atmosphere. At the annual conference of the British Commercial Gas Association, Dr. R. V. Clark, health officer of Manchester, said that the abolition of smoke was a thoroughly feasible proposition and would do more for the improvement of health in our industrial centres than any other action. The sunlight treatment for the cure and

prevention of rickets and tuberculous disease had given as good results in England as those obtained in Switzerland. It was of the greatest importance to adopt all procedures that would enable the solar radiations to reach our bodies in the natural way. Ultra violet rays will not pass through clothing, and the modern fashions whereby women exposed their arms and necks were to be commended. It was the continued lack of sunlight due to the pollution of the air by smoke which made men old at fifty.